



Waterkey

Shanghai Yu Bo qian zhou Ship Equipment Co., Ltd.



Efficient Fire Suppression Solution for Ship Container Fires

Waterkey System

Waterkey is an integrated firefighting piercing device that combines cutting and spraying functions. It incorporates a telescopic pole and a fixing mechanism, utilizing top hooks to secure onto container lock rods. By operating a winch to retract the flexible cable and rod the device, it enables remote firefighting operations from the ground. This ultimately allows personnel to work safely away from potentially hazardous areas, effectively addressing firefighting challenges in high-stacked container scenarios.

Waterkey features a cutting spray head assembly that utilizes firewater pressure to drive a high-speed rotating disk, which in turn rotates the hole cutter for drilling. With automatic switching of the water flow path before and after drilling, it achieves a fully automated cycle from breaching to firefighting solely driven by water pressure. This ultimately ensures efficient fire suppression inside containers under confined space conditions.

- Once the system is fixed with the container, it can automatically complete all necessary steps by connecting to the fire water source.
- In case of a fire, no other electricity is needed at all.
- It is compatible with various fire hydrant interfaces on the ship.



The Waterkey system it reduces the complexity of container fire suppression technology, providing a faster, safer and more efficient solution that can directly extinguish fires from high positions on container ships, saving valuable vessels and the lives of crew members.

This device operates solely based on the water pressure provided by the fire main, without the need for external electricity. It can drill through the standard container doors and extinguish the fire inside.

This unique system consists of an extension rod and a drilling device. Through the unique roding mechanism on the extension rod, the drilling device is precisely aimed at the burning container during the firefighting process, thereby enhancing the safety of the crew, cargo and the vessel.

Specifications:

- Fully automated penetration and fire extinguishing
- A telescopic rod takes the Waterkey to the critical container
- 100% fire main powered - no electricity required
- Simple to operate and mount on the critical container
- Protects the crew, the cargo & the ship
- Avoidance of significant cost impact in case of container fire
- Equipped with various specifications of fire hydrant interface conversion connectors



Core values and advantages



01

High-efficiency penetration capability

It can penetrate the steel plates of standard containers within 12 to 30 seconds, and complete the drilling operation for ISO standard containers within 30 seconds, thus securing crucial time for fire response.

02

Multilayered stacking fire suppression capability

Supports the firefighting of 5-story stacked container fires, and is compatible with a 13-meter telescopic operation pole to meet the fire-fighting needs of containers of different heights.

03

Safety operation distance guarantee

Operators can perform their tasks in a safe area away from the fire scene using the telescopic rods, thus avoiding direct exposure to high temperatures, thick smoke and the risk of structural collapse.

04

Comparing the advantages of traditional tools

Compared with traditional demolition tools (such as hydraulic shears and cutting machines), it does not require an external power supply or fuel. The operation is more convenient, and the penetration speed is increased by 3 to 5 times.



TYPE APPROVAL CERTIFICATE
No. FPE595425WS

This is to certify that the product identified below satisfies the requirements of the standard quoted under "Reference standard"

Description	Portable fire-fighting device for stacked containers
Type	Waterkey System
Applicant	Shanghai YuBo Qianzhou Ship Equipment Co., Ltd. 5th Floor, No. 310 Jin Gao Road, Pudong New Area, Shanghai China
Manufacturer	Shanghai Hanghao Moulding Co., Ltd.
Place of manufacture	No.138, Longxian Road, Qingcun Town, Fengxian District, Shanghai China
Reference standards	Reg.II-2/10.7.3.1.1 of SOLAS '74 as amended
Reference documents	Rules for Testing and Certification of Marine Materials and Equipment

Issued in SHANGHAI on September 18, 2025. This Certificate is valid until September 17, 2030



Zhi Yuan Tan
RINA Services S.p.A.

This certificate consists of this page and 1 enclosure

TYPE APPROVAL CERTIFICATE
No. FPE595425WS
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Waterkey System

Field of Application

The Portable Fire-fighting Device for Stacked Containers (Type: Waterkey System), is a combined penetration and firefighting equipment. It is designed to penetrate and spray water mist to suppress fires within stacked containers, in compliance with the guidelines established by IMO Resolution MSC.365(93).

When connected to a fire main line, the system will start the penetration process and once inside the enclosed space automatically change to firefighting mode.

Technical Data

Waterkey System Material	Stationary Part: Aluminum Alloy Rotating Part: Stainless Steel / Copper Nozzle Ring/Bushing: Aluminum Alloy	
Nominal Capacity	248L/min@0.15Mpa (*) 265L/min@0.2Mpa (*) 320 L/min@0.28Mpa (*) 367 L/min@0.4 Mpa (*) 406 L/min@0.6 Mpa (*)	
Nominal Working Pressure	0.4 Mpa	
Max Working Pressure	1.3 Mpa	
Nominal Water Throw	8.5 m@0.15 Mpa (*) 8.8 m@0.2 Mpa (*) 9.3 m@0.28 Mpa (*) 12.5 m@0.4 Mpa (*) 12.8 m@0.6 Mpa (*)	
Max. Penetration Thickness	3 mm	
Opening Time	Thickness: 2 mm 125s @0.15Mpa (*) 115s @0.2 Mpa (*) 43s @0.28 Mpa (*) 23 s @0.4 Mpa (*) 12 s @0.6 Mpa (*)	Thickness: 3 mm 180s @0.15Mpa (*) 170s @0.2 Mpa (*) 60s @0.28 Mpa (*) 30 s @0.4 Mpa (*) 15 s @0.6 Mpa (*)
Overall Length	L: 790 mm; W: 250 mm; H: 231 mm	
Weight	5.2 Kg	
Inlet Dimension	DN 50	
Drill Size	40 mm	

Note: *) Data from Initial Test.

Reference Document

The design assessment is based on IMO Resolution MSC.365(93) with following documents:

- Waterkey System Technical Specification, filed by RINA with No.: SHFP-33506.
- Technical Drawings, approved by RINA with No.: SHFP-33658.
- Waterkey System Operation Manual, filed by RINA with No.: SHFP-33661.
- Waterkey System List of Spare Parts, filed by RINA with No.: SHFP-33662.



Certificate



TYPE APPROVAL CERTIFICATE
No. FPE595425WS
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Waterkey System

Production and Tests

The production must be carried out in accordance to the manufacturer quality production system.
Tests was carried out and witnessed by RINA Surveyor according to Reg.II-2/10.7.3.1.1 of SOLAS '74 as amended.
Relevant Test Report (Ref No.: 20250916) issued by Shanghai YuBo Qianzhou Ship Equipment Co., Ltd, it has been filed by RINA with No.: SHFP-33663.

Remark

Waterkey System should be equipped with a coupling allowing connection to the ship's fire hydrants by fire hoses, and it can also work with foam and CO2.
Adapter coupling will be provided if necessary, and the coupling should be sized so as to ensure that the flow and pressure needed for correct performance will be provided.
The Waterkey System shall be tested after installation onboard. The manufacturer's operating guidelines includes information on the safe operation of the Waterkey System to be observed.
The product or packing is to be marked with Manufacturer name, type and designation.

General Conditions for the Approval:
a) The initial conditions verified by RINA at the time of the approval are to be maintained;
b) Any changes to the initial conditions are to be promptly communicated to RINA, which reserves the right to repeat the relevant assessment;
c) This certificate will no be valid if the manufacturer makes any changes or modifications to the approved equipment, which have not been notified to, and agreed with RINA;
d) RINA personnel are to be allowed to witness during the performances of activities, upon their request;
e) The activities are to be carried out in compliance with the RINA Rules and/or other applicable Rules;
f) Should the specified regulations or standards be amended during the validity of this certificate, the product is to be reapproved prior to it being placed on board vessels to which the amended regulations or standards apply.

SHANGHAI 09/18/2025



Production Quality Assurance Certificate
CERTIFICATE Nr. PQA603225WS

This is to certify that RINA did undertake the examination of the equipment identified below with the criteria for the Production Quality Assurance set-up in the "Rules for Testing and Certification of Marine Materials and Equipment".

Description	Portable fire-fighting device for stacked containers	
Type	Waterkey System	
Applicant	Shanghai YuBo Qianzhou Ship Equipment Co., Ltd.	
	5th Floor	
	No. 310 Jin Gao Road	
	Pudong New Area	
	Shanghai	
	China	
Type Approval	Number	FPE595425WS
certificate	Date	09/18/2025

Issued in RINA China Marine
on
September 22, 2025
This Certificate is valid until
September 17, 2030

This Certificate consists of this sheet plus an attachment

This certificate is relevant to the verification of the effectiveness of the quality assurance system adopted by the Manufacturer and applied for production, inspection and testing during manufacturing and on finished products, to guarantee the required characteristics of the products covered by relevant Type Approval certificates.



Yongjun Pan
RINA Services S.p.A.

1. The Waterkey System constituent part

- Waterkey drilling unit ;
- 3 sets of special drill bits, 1 set of rubber test drill bits;
- Special wrench for disassembling the hole saw;
- 1 set of Carbon dioxide connector;
- 1 set of Foam injection pump;
- One bottle of lubricating oil;
- Special box (for storing the above items).



Main technical parameters :

- Inlet C Storz DN50 ;
- Nom water pressure/flow 367 ltr./min @ 4 bar ;
- Min working pressure 1.5 bar ;
- Max working pressure 13 bar ;
- Drill size 40 mm ;

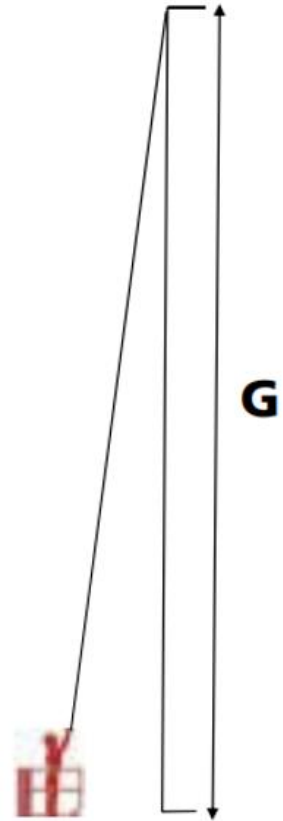
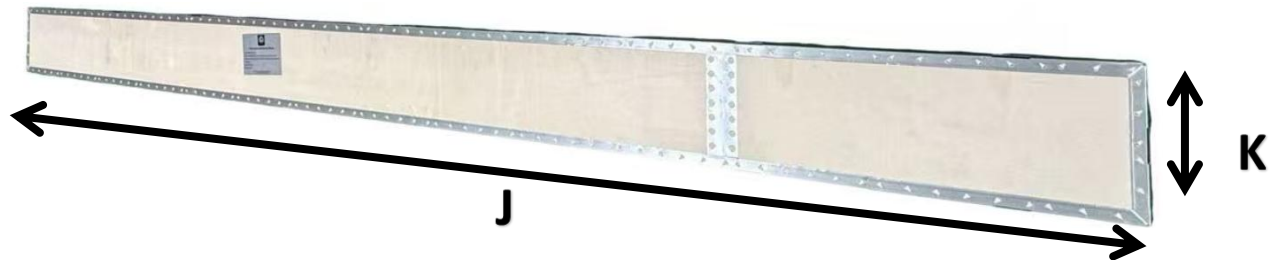
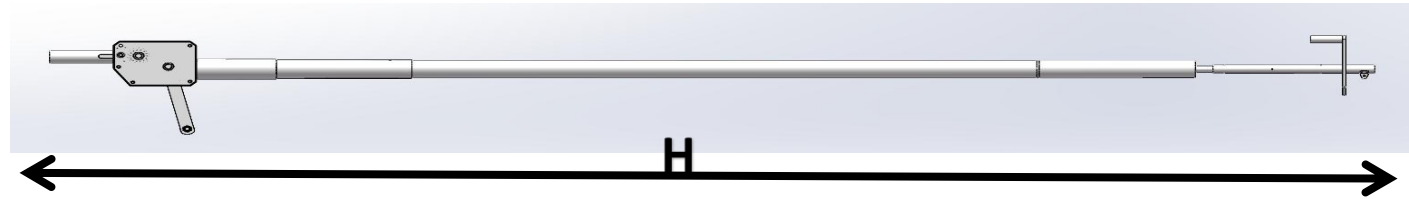
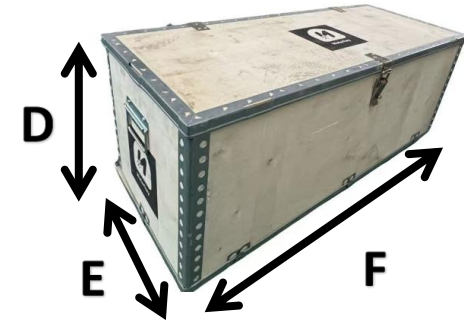
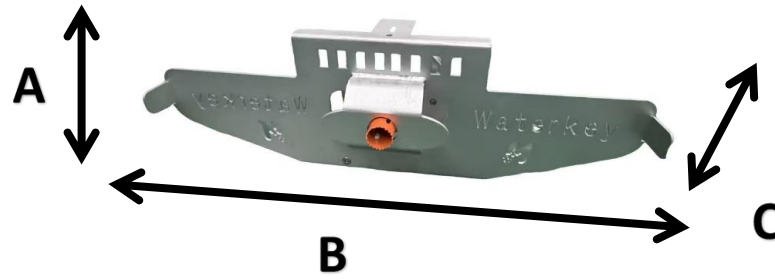
Weight:

- Drilling unit: 5.2 kg;
- Telescopic rod: 7 kg.



2. Dimensions

A:231mm
B:790mm
C:250mm
D:360mm
E:350mm
F:870mm
G:14500mm
H:2800mm
J:3000mm
K:195mm
L:210mm



- 1、 Waterkey includes packaging: 13.5Kg,
- 2、 Telescopic rod includes packaging : 15Kg,
- 3、 Carbon dioxide connector : 2.4Kg ,
- 4、 Foam injection pump : 4.64Kg,

3. Technical Standard

1 .Waterkey DRILLING PART

Type	Combined penetration and firefighting unit.
Model	Waterkey No.1
Nominal water pressure	4-6 bars.
Min working pressure	1.5bars.
Max working pressure	13bars.
Flow	367 l/min @ 4 bars.
Throw length	12.5 m @ 4 bars.
Overall dimensions	L: 790 mm. W: 250 mm H: 231 mm.
Weight	5.2kgs.
Materia	Stationary part: Gunmetal Rotating part: Stainless steel type 316 Nozzle ring: Aluminium Body: Aluminium
Drill size	40 mm customized.

2.THE TELESCOPIC ROD

Type the	Telescopic device for hoisting Waterkey drilling part up to specific container(s) at heights.
Weight	7 kgs.
Height	Retracted: 2.8meters. Fully extracted: 13.25 meters
Material	The rod Carbon fiber rod; Stainless steel winch; Aluminum alloy top hook

4. The usage method of the carbon dioxide connector :

4.1 Open the water supply

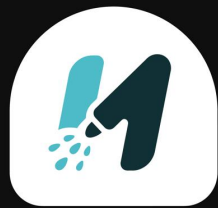
4.2 Remove the split from the CO2 fire extinguisher and SLOWLY open for the CO2 pressure and keep the CO2 flow running until the fire extinguisher is empty.

4.3 When the CO2 fire extinguisher is empty, replace the it with a new CO2 fire extinguisher. To limit the amount of water delivered into

the container, the water pressure can be turned off during the exchange of the CO2 fire extinguisher.

4.4 The materials exposed to the CO2 will become very cold. Make sure to wear gloves during the above described operation



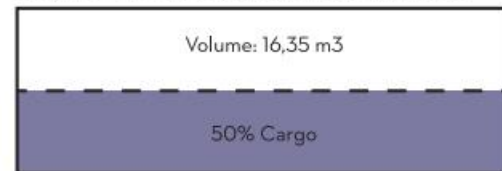


Waterkey

4.5 CO₂ CONTAINER FILLING REQUIREMENTS

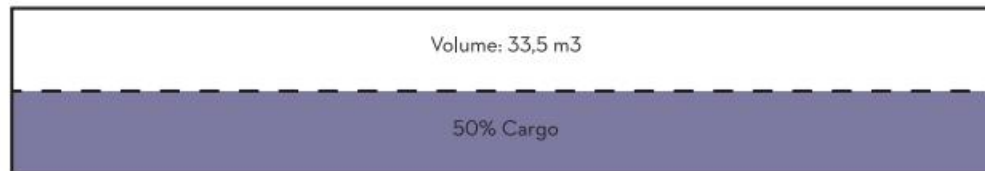
In order to prevent the fire hose from frosting up, a mixture of carbon dioxide and a small amount of water is introduced into the container through the waterkey, which will significantly enhance the efficiency of extinguishing Class C fires. The number of portable carbon dioxide cylinders required for filling the container with carbon dioxide :

50% full 20-foot standard ISO container



CO 5 kg 2 pcs

50% full 40-foot standard ISO container



CO 5 kg 3 pcs

5. The usage method of the Foam injection pump :

The Waterkey can operate with foam. Supplying the Waterkey with foam will make it capable of fighting container fires, that do not respond well to water. For usage see the steps below:

1. Use the Waterkey to penetrate the critical container by using normal water pressure.
2. Stop the water flow once the container has been penetrated and disconnect the fire hoses from the hydrant and drain the water from the hose.
4. Place and connect an Foam injection pump between the Waterkey and the hydrant.
5. Place the tube in the foam container and activate the Foam injection pump.

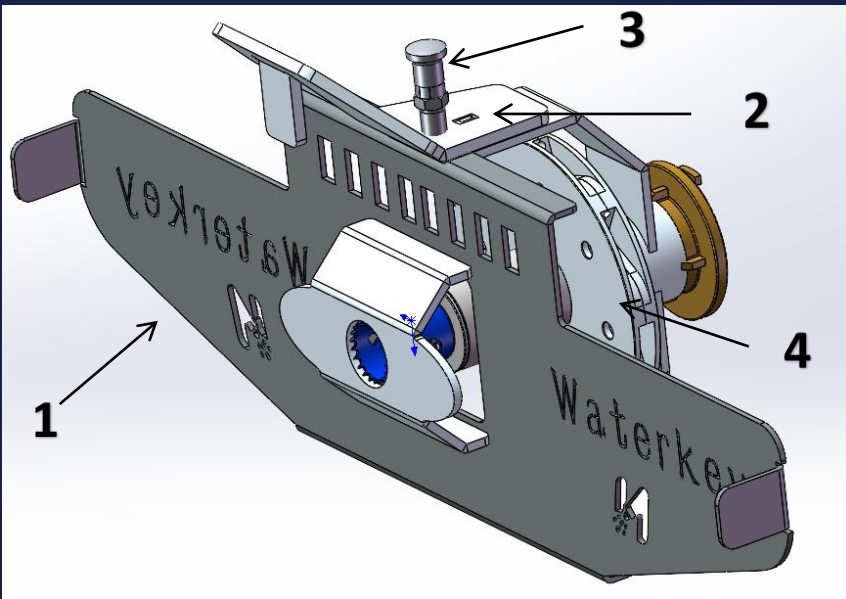
5. Activate the water flow which together with the inductor will create a spray of foam inside the burning container through the Waterkey.



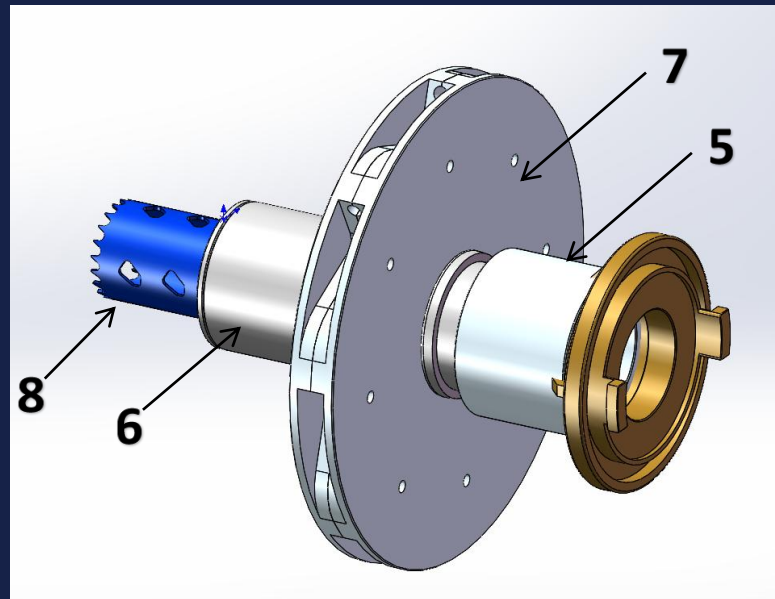
6. COMPONENT INTRODUCTION

6.1 Waterkey Section:

- 6.1.1 Fixed horizontal plate;
- 6.1.2 Clamping plate;
- 6.1.3 Spring lock;
- 6.1.4 Cutting spray head assembly;



- 6.1.5 Fixed collar;
- 6.1.6 Rotating shaft;
- 6.1.7 Rotating disk;
- 6.1.8 Drill bit;



6.2 Opening bit

This kit includes 3 specific Opening bits, which can drill through the door panels of standard containers. These hole saws are custom-made for the Waterkey system and are installed and fixed using specific tools.



AFTER EVERY USE WITH SALTWATER FLUSH THE DRILLING UNIT AND THE TELESCOPIC rod SYSTEM THOROUGHLY WITH FRESH WATER TO ENSURE PROPER FUNCTIONING IN THE FUTURE.

COMPONENT INTRODUCTION

6.3 DUMMY DRILL (FOR TRAINING)

To make the training with the Waterkey system more realistic the dummy drill provided can be used. The dummy drill enables the Waterkey system to operate with water without drilling into the container by replacing the hole saw with a dummy hole saw.

However, the vital part of learning how to operate the Waterkey system is to train the deployment of the system on the specific container/containers. All training/operational exercises can be done without providing water to the system.



6.4 Wrench tool

The spanner is used for demounting the hole saw when the Waterkey drilling unit has been used.

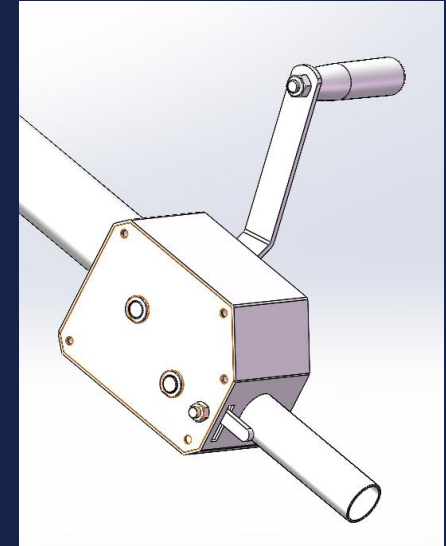
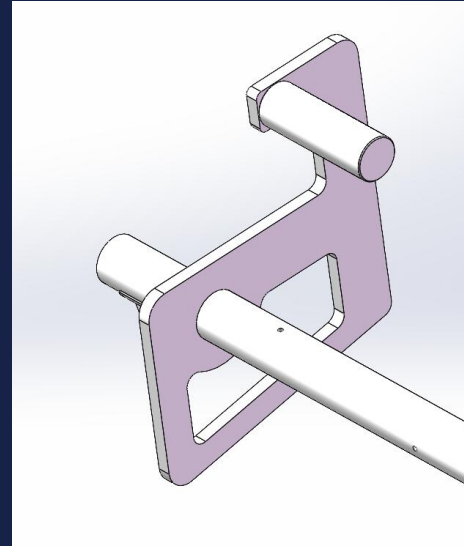


COMPONENT INTRODUCTION

6.5 THE TELESCOPIC ROD

This telescopic pole is composed of 8 carbon fiber rods. Its total length is 13.25 meters, and when retracted, it is 2.8 meters long. At the bottom, there is a manual winch, and at the top, there is a pulley. The steel wire rope is connected to the top through the inside of the pole and passes through the pulley to return from the bottom. At the end, there is a locking ring, which is connected to the "water key". Once connected, use the winch to rod the "water key" to the top of the telescopic pole, and it can rod the water key to the top of a 5-layer stacked container.

The telescopic rod is made of carbon fiber, which is more expensive but has the advantages of being lightweight and having high strength.



7. PRODUCT WARNING

All personnel who may use this equipment must undergo comprehensive safety operation training. The usage situation of the product refers to the guidance section included in the instructions.

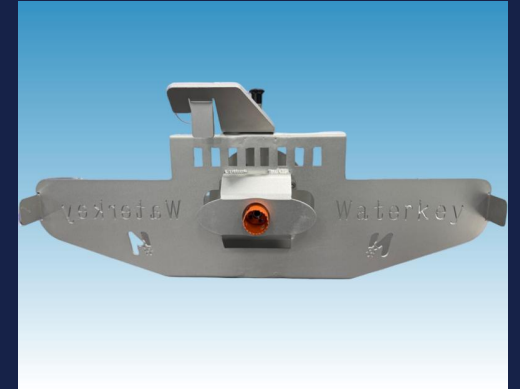
- When operating the Waterkey system, please ensure the use of appropriate personal protective equipment. You must wear protective clothing. When roding the "Waterkey", you must wear protective gloves and a protective helmet.
- Incorrect layout of the fire hose may cause instability.
- It can only be used with water (foam can be added through water and carbon dioxide via a designated adapter).
- Open the fire hydrant slowly to avoid knocking.
- Protect the drilling saw and only use the specified drilling saw provided with the kit.
- For effective and safe operation, operators must undergo training. Each vessel must have procedures for deploying and operating the Waterkey system in crisis situations. Regular routine training and practice of this equipment are necessary conditions for correct and appropriate use. It is recommended to conduct at least minimum drills every quarter. Annual operations involving the roding of the telescopic arm must be conducted.
- Only use the telescopic arm for roding the Waterkey system; it must not be used for roding any other items.
- The manufacturer shall not be held responsible for any consequences arising from improper use of this equipment. No relevant provisions have been made in these instructions.
- The manufacturer is not liable for any consequences resulting from the use or installation of the equipment in a manner not described in this manual, or for any consequences resulting from the dismantling, modification or repair of the equipment;
- Temperature range in winch area between -15 and + 55 degrees.
- After use, and on a scheduled basis, the parts must be inspected in accordance with the instructions in section 9 Maintenance and storage

8. MAINTAIN PRODUCT WARRANTY

In order to maintain the product warranty of two years the following will have to be complied with

The Waterkey system:

1. Must not be dismantled in any way, unless it is part of a maintenance process as described in section 9.
2. Must not be modified. The original equipment parts must not be replaced.
3. Must only be used with the original hole saws, including the training dummy saw, as provided with the product.
4. Must be maintained in accordance with section 6 and never deviated from.
5. Must only be used for the purpose described in this user guide.
6. Must never be used for training purposes on a loose container door, which is not in a straight vertical position.
7. If the Waterkey system has been used in a real-life fire case the warranty will lapse (in such case a service check to extend/restore the warranty or a system replacement is recommended).



9. MAINTENANCE AND STORAGE

9.1 THE Waterkey DRILLING PART

After every use

1. Wash it clean with water, dry it and then thoroughly wipe off the remaining water. Remove the old drill bit.
2. Install a new drill bit. Then the equipment is ready for use.

9.2 THE TELESCOPIC rod SYSTEM

After every use

1. Check if there are any abnormalities in the steel wire rope and the clamps.
2. Thoroughly rinse the pole and the winch with clean water.
3. Dry the equipment and install the protective cover.

Every six months

1. Apply lubricating oil to the wire reel and conduct a check.
2. Carefully inspect the steel wire rope and the clamps for any abnormalities. When winding the line onto the reel, ensure that the line bundle is tight to prevent it from getting stuck.
3. Move the handle to lower or rise up the steel wire rope. During this process, you must need to pull the steel wire rope with your hand to prevent it from getting tangled in the winch.

10. CONTAINER MODEL

The Waterkey system can be installed on ISO-standard containers. The doors of these containers are equipped with hanging lock rods and grooves to provide hooks for hanging Waterkey. However, there are still older types of containers that may have hidden lock rods or other locking systems, and Waterkey cannot be installed on these containers. Additionally, Waterkey cannot be installed on refrigerated containers.

Standard international standardized shipping container types

- It has freely hanging lock rods and grooves on the door, allowing the Waterkey to be easily installed. The top hook and latch device.
- Install Waterkey at the highest possible angle on the lock rod and as close to the hinge as possible. The container door.

Older types of shipping containers / Reefer containers

- It does not have freely hanging locking bars.
- Nor does it have indentations on the door where the hook of both the Telescopic rod and HydroLock can be locked into place.



10. OPERATING INSTRUCTIONS

10.1 Install the special drill bit.



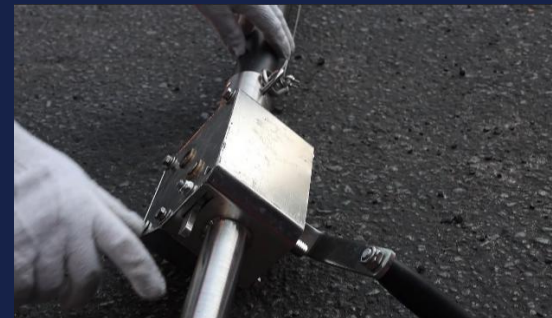
10.2 Place the WaterKeyLock on top of the Waterkey and fit it in the slot and the hole. Push the Lock forward.



10.3 By using the lashing bridge, the waterkey can be directly installed in the groove of the container door.



10.4 This is the winch of the telescopic pole. By turning the handle of the winch, the steel wire rope inside the winch can be loosened or retracted.



10.5 Crank the winch handle to release the steel wire rope from the winch. During this process, pull the wire rope outward by hand ensure that the line bundle is tight to prevent it from getting stuck.



10.6 Hook the safety hook attached to one end of the flexible cable/lashing onto the top of the fixed horizontal plate.



10.7 Pull out the telescopic rod



10.8 Extend the telescopic rod and stretch it to the position of the container requiring firefighting.



10.9 Crank the winch to allow the flexible cable to lift the entire device, raising it to the burning/smoking container.



10.10 Open the ship's firewater valve. The water pressure drives the rotating disk to spin at high speed, initiating drilling. Once the hole is drilled, the system automatically switches to firefighting mode.



10.11 For more detailed operation steps, please scan the QR code to watch the video.

